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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/654,174	09/03/2003	Ralph Romero	SL1217	4343

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EXAMINER	
DIAMOND, ALAN D	

ART UNIT	PAPER NUMBER
1753	

DATE MAILED: 04/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/654,174	ROMERO ET AL.	
	Examiner	Art Unit	
	Alan Diamond	1753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 January 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *27 January 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Comments

1. The objection to the drawing has been overcome by Applicant's amendment of the drawing.

2. The rejection of claims 13-20 under 35 USC 112, second paragraph, has been overcome by Applicant's amendment of claim 13.

Claim Rejections - 35 USC § 102/103

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 8 and 9 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Lampkin et al (U.S. Patent 4,307,681).

With respect to claim 8, Lampkin et al teaches the preparation of a thin film solar cell comprising a glass substrate; a hard, highly scratch resistant tin oxide conductive transparent layer on the substrate, wherein said tin oxide layer reads on the instant

CTO; a heterojunction photovoltaic element on the tin oxide layer; and a conductive layer (rear electrode) on the photovoltaic element (see col. 13, line 28 through col. 15, line 43; and Figures 2 and 3). Lampkin et al's device is "thin film" as in claim 8, particularly in view of the thickness of the tin oxide layer (see Table I at col. 13).

With respect to claim 8, Lampkin et al teaches that tin oxide films formed at a temperature of above about 475°C have a preferred hardness so as to form the hard, scratch resistant tin oxide film solar cell (see col. 13, lines 42-63). An exemplified thickness of the tin oxide film is 3000 to 6000 angstroms (i.e., 0.3 to 0.6 microns) (see Table I at col. 13). It is the Examiner's position that Lampkin et al's tin oxide films, prepared at col. 12, line 11 through col. 13, line 44 inherently have improved resistance to corrosion and inherently have the instant hardness of at least about 200 Number of Taber passes, or at least about 300 Number of Taber passes, or at least about 400 Number of Taber passes, or at least about 500 Number of Taber passes, or at least about 600 Number of Taber passes, or at least about 700 Number of Taber passes, measured when using a CTO layer that is 6000 angstroms thick. This is particularly so in view of the fact that tin oxide is the same material as here claimed (see claim 10), and in view of the fact that Lampkin et al specifically calls its tin oxide film hard and scratch resistant.

With respect to claim 9, Lampkin teaches plural interconnected cells on the glass substrate, and a skilled artisan would consider this to be a photovoltaic module (see col. 15, lines 38-43).

Since Lampkin et al teaches the limitations of the instant claims other than the difference which is discussed below.

In addition, the instant CTO layer having a hardness and improved corrosion resistance as here claimed would obviously have been present once Lampkin et al's solar cell having the tin oxide layer is provided. Note In re Best, 195 USPQ at 433, footnote 4 (CCPA 1977) as to the providing of this rejection under 35 USC 103 in addition to the rejection made above under 35 USC 102.

6. Claims 1-20 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over JP 11-298018 (herein referred to as JP '018).

With respect to claims 1, 10, 12, 13, and 20, JP '018 prepares a photovoltaic device comprising glass substrate (1), i.e., instant first substrate; transparent conductive tin oxide film (2) (i.e., instant CTO), photovoltaic elements (3) on the tin oxide film (2), rear electrode (4); and second substrate (6) (see Figure 1; and paragraphs 0015-0018). The tin oxide has a film thickness of about 6000 angstroms or less (paragraph 0012), and JP '018 exemplifies thicknesses of 5000 angstrom and 6000 angstrom (see Table 2). The first substrate (1) is sealed to the second substrate (6) using sealing agent (5) (see paragraph 0018); and Figure 1).

With respect to claims 1-6 and 13-18, JP '018's tin oxide film (2) strengthens the substrate (1), e.g. reinforces it, and it is the Examiner's position that the tin oxide films prepared at paragraphs 0020 to 0027 and 0041 inherently have improved resistance to corrosion and inherently have the instant hardness of at least about 200 Number of

Taber passes, or at least about 300 Number of Taber passes, or at least about 400 Number of Taber passes, or at least about 500 Number of Taber passes, or at least about 600 Number of Taber passes, or at least about 700 Number of Taber passes, measured when using a CTO layer that is 6000 angstroms thick. This is particularly so in view of the fact that tin oxide is the same material as here claimed and JP '018's tin oxide strengthens the substrate.

With respect to claims 7 and 9, the device seen in JP '018's Figure 1 is a photovoltaic module.

With respect to claim 8, JP '018's device is thin film in view of the thicknesses used (see paragraphs 0004 and 0035).

With respect to claim 11, JP '018's device comprises amorphous silicon (see paragraph 0017).

Since JP '018 teaches the limitations of the instant claims, the reference is deemed to be anticipatory.

In addition, the instant CTO layer having a hardness and improved corrosion resistance as here claimed would obviously have been present once JP '018's photovoltaic device having the tin oxide layer is provided. Note In re Best, 195 USPQ at 433, footnote 4 (CCPA 1977) as to the providing of this rejection under 35 USC 103 in addition to the rejection made above under 35 USC 102.

Claim Rejections - 35 USC § 103

7. Claims 1-7 and 10-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lampkin et al (U.S. Patent 4,307,681) in view of JP 9-116180 (herein referred to as JP '180).

With respect to claims 1 and 13, Lampkin teaches the preparation of a solar cell comprising a glass substrate (i.e., instant first substrate); a hard, highly scratch resistant tin oxide conductive transparent layer on the substrate, wherein said tin oxide layer reads on the instant CTO; a heterojunction photovoltaic element on the tin oxide layer; and a conductive layer (rear electrode) on the photovoltaic element (see col. 13, line 28 through col. 15, line 43; and Figures 2 and 3).

With respect to claims 1-6 and 13-18, Lampkin et al teaches that tin oxide films formed at a temperature of above about 475°C have a preferred hardness so as to form the hard, scratch resistant tin oxide film for the solar cell (see col. 13, lines 42-63). An exemplified thickness of the tin oxide film is 3000 to 6000 angstroms (i.e., 0.3 to 0.6 microns) (see Table I at col. 13). It is the Examiner's position that Lampkin et al's tin oxide films, prepared at col. 12, line 11 through col. 13, line 44 inherently have improved resistance to corrosion and inherently have the instant hardness of at least about 200 Number of Taber passes, or at least about 300 Number of Taber passes, or at least about 400 Number of Taber passes, or at least about 500 Number of Taber passes, or at least about 600 Number of Taber passes, or at least about 700 Number of Taber passes, measured when using a CTO layer that is 6000 angstroms thick. This is particularly so in view of the fact that tin oxide is the same material as here claimed (see

claim 10), and in view of the fact that Lampkin et al specifically calls its tin oxide film hard and scratch resistant.

With respect to claim 7, Lampkin teaches plural interconnected cells on the glass substrate, and a skilled artisan would consider this to be a photovoltaic module (see col. 15, lines 38-43).

With respect to claim 10, and as noted above, Lampkin et al's tin oxide layer reads on the instant CTO.

With respect to claim 12, an exemplified thickness of Lampkin et al's tin oxide film is 3000 to 6000 angstroms (i.e., 0.3 to 0.6 microns) (see Table I at col. 13).

With respect to claim 19, and as noted above, Lampkin et al's tin oxide layer reads on the instant CTO.

With respect to claim 20, an exemplified thickness of Lampkin et al's tin oxide film is 3000 to 6000 angstroms (i.e., 0.3 to 0.6 microns) (see Table I at col. 13).

Lampkin et al teaches the limitations of the instant claims other than the differences which are discussed below.

Lampkin et al does not specifically teach the use of a second substrate, as in instant claims 1 and 13. JP '180 teaches a solar battery module comprising glass substrate (12); transparent electrode, e.g., tin oxide layer (14); a semiconductor layer (16); a rear electrode (18); and a rear covering comprising thermosetting resin (22) and glass matt (24), wherein the resin (22) seals the glass substrate (12) to the glass matt (24) (see Figure 1; and paragraphs 0012 to 0017). The rear covering provides the advantage of weather and moisture resistance (see paragraphs 0001, 0031 and 0032).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided Lampkin et al's solar cell device, e.g., plural interconnected cells on the glass substrate with the rear covering of JP '180 (i.e., with a second substrate as here claimed) because JP '180's rear covering provides the advantage of weather and moisture resistance. A skilled artisan would provided such a rear cover by way of resin (22), as taught by JP '180.

With respect to claim 11, Lampkin et al does not specifically teach that its semiconductor material can comprise amorphous silicon. Lampkin et al does teach semiconductor material such as CdS, ZnS, CdZnS can be used (see col. 14, lines 5-16). However, Lampkin et al is not limited to any particular semiconductor material (see col. 2, lines 11-18). JP '180 teaches the interchangeability of the use an amorphous silicon system and CdS system as the semiconductor material for a solar cell (see paragraph 0015). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used an amorphous silicon system in place of a CdS system for the semiconductor material in Lampkin et al's solar cell because the substitution of art recognized equivalents, as shown by JP '180 would have been within the level of ordinary skill in the art.

Response to Arguments

8. Applicant's arguments filed January 27, 2006 have been fully considered but they are not persuasive.

With respect to Lampkin et al and JP '018, applicant argues that inherency must be certain. Applicant argues that there is nothing in Lampkin et al that states how hard

the film is, and that JP '018 "appears to address strength of a solar battery" but does not disclose anything about the hardness of the tin oxide layer. However, these arguments are not deemed to be persuasive. Firstly, as seen in MPEP 2112 (II), there is no requirement that a person of ordinary skill in the art would have recognized the inherent disclosure at the time of invention, but only that the subject matter is in fact inherent in the prior art reference. The basis to support the Examiner's inherency argument is that Lampkin et al prepares specific tin oxide material in its examples, and the tin oxide is hard and highly scratch resistance. Likewise, JP '018 prepares a tin oxide film at paragraphs 0020 to 0027, and JP '018's tin oxide strengthens the substrate. Applicant has not shown an unobvious difference between the instant "CTO" and the tin oxides prepared by Lampkin et al and JP '018.

Applicant cite Figure 1 and argues that they have discovered that the hardness of at least 200 Numbers of Taber Abraser passes "greatly and unexpectedly improves the corrosion resistance of a photovoltaic device such as a module." However, this argument is not deemed to be persuasive because, as seen in MPEP 2112, "[t]he discovery of a previously unappreciated property of a prior art composition, or of a scientific explanation for the prior art's functioning, does not render the old composition patentably new to the discoverer." Atlas Powder Co. v. Ireco Inc., 190 F.3d 1342, 1347, 51 USPQ2d 1943, 1947 (Fed. Cir. 1999). Thus the claiming of a new use, new function or unknown property which is inherently present in the prior art does not necessarily make the claim patentable. In re Best, 562 F.2d 1252, 1254, 195 USPQ 430, 433 (CCPA 1977). Additionally, the Examiner has considered the data in instant Figure 1

and does not deem it to be persuasive because it does not provide a comparison with the specific tin oxides prepared in Lampkin et al's examples and in JP '018's paragraphs 0020 to 0027.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alan Diamond whose telephone number is 571-272-1338. The examiner can normally be reached on Monday through Friday, 5:30 a.m. to 2:00 p.m. ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Alan Diamond
Primary Examiner
Art Unit 1753

Alan Diamond
April 12, 2006